AMENDMENTS TO THE CLAIMS:

Please amend claims 1, 3 and 4, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently amended): A semiconductor device comprising:

a first wiring copper layer,

an interlayer insulating film over the first wiring copper layer,

a second wiring copper layer formed on the interlayer insulating film, and

a wiring via formed in the interlayer insulating film to electrically connect the first wiring copper layer to the second wiring copper layer,

wherein the wiring via comprises:

a layer of alloy of a catalyst metal and a second metal different from the catalyst metal, the layer being formed on the first wiring copper layer,

a layer of carbide of the second metal formed on the layer of alloy, and

a carbon element cylindrical structure body incorporating therein the catalyst metal at the root, the side wall of the carbon element cylindrical structure body being formed on the layer of carbide.

Claim 2 (Previously presented): The semiconductor device of claim 1, wherein the catalyst metal is Ni, Fe or Co.

Claim 3 (Currently amended): The semiconductor device of claim 1, wherein the material of the second metal is Ti, Nb, Si or C.

Claim 4 (Currently amended): A semiconductor device comprising:

a substrate,

a first electrode comprising a first metal formed on the substrate and a carbide of the first metal formed on the first metal,

a carbon element cylindrical structure body incorporating therein a catalyst metal at the root, the side wall of the carbon element cylindrical structure body being formed on the first electrode,

wherein the carbon element cylindrical structure body is electrically connected to the first electrode through the carbide of the first metal.

Claim 5 (Previously presented): The semiconductor device of claim 4, further comprising a second electrode formed on the substrate, wherein the carbon element cylindrical structure body is electrically connected to the second electrode at the end opposite to the end thereof connected to the first electrode.

Claim 6 (Withdrawn): A method for producing an electronic device having a structure of ohmic connection to a carbon element cylindrical structure body, comprising disposing a metal material on a connection objective capable of ohmically contacting a carbon element cylindrical structure body and forming a carbon element cylindrical structure body by chemical vapor deposition using said metal material as the catalyst while accomplishing an ohmic contact between the carbon element cylindrical structure body and the connection objective.

Claim 7 (Withdrawn): The method for producing an electronic device as claimed in claim 6, wherein the material of said connection objective is alloyed with said metal material by the elevation of temperature during said chemical vapor deposition and a carbon element cylindrical structure body is grown using the particle of said metal material in said alloy as the catalyst for said chemical vapor deposition.

Claim 8 (Withdrawn): The method for producing an electronic device as claimed in claim 6, wherein the material of said connection objective is Ti, Nb, Si or C.

Claim 9 (Withdrawn): The method for producing an electronic device as claimed in claim 6, wherein said metal material is Ni, Fe or Co, or an alloy containing at least one of Ni, Fe and Co.

Claim 10 (Withdrawn): The method for producing an electronic device as claimed in claim 6, wherein said chemical vapor deposition is performed by applying an electric field in the growth direction of the carbon element cylindrical structure body.

Claim 11 (Withdrawn): The method for producing an electronic device as claimed in claim 6, wherein said carbon element cylindrical structure body is a carbon nanotube.

Claim 12 (Withdrawn): A method for producing an electronic device having a structure of ohmic connection to a carbon element cylindrical structure body, comprising forming a first stack of a first material capable of ohmically contacting a carbon element cylindrical structure body and a second material of catalyst metal disposed on said first material, heat-treating said first stack in vacuum or in a hydrogen atmosphere to form a second stack made of a lower layer composed of an alloy of the first material and the second material, an intermediate layer composed of the first material and an upper layer composed of a fine particle of the second material, and forming a carbon element cylindrical structure body by chemical vapor deposition using the fine particle of the second material on the surface of said second stack as the catalyst to incorporate the fine particle of the second material into the inside of the carbon element cylindrical structure body and at the same time, connect, by ohmic contact, the side wall of the carbon element cylindrical structure body to the intermediate layer composed of the first material.

Claim 13 (Withdrawn): The method for producing an electronic device as claimed in claim 12, wherein said first material is Ti, Nb, Si or C.

Claim 14 (Withdrawn): The method for producing an electronic device as claimed in claim 12, wherein said second material is Ni, Fe or Co, or an alloy containing at least one of Ni, Fe and Co.

Claim 15 (Withdrawn): The method for producing an electronic device as claimed in claim 12, wherein said chemical vapor deposition is performed by applying an electric field in the growth direction of the carbon element cylindrical structure body.

Claim 16 (Withdrawn): The method for producing an electronic device as claimed in claim 12, wherein said carbon element cylindrical body is a carbon nanotube.

Claim 17 (Withdrawn): A method for growing a carbon nanotube, comprising disposing a substrate in a growth chamber, supplying a starting material gas to the chamber, and orientation-growing a carbon nanotube on the substrate by CVD, wherein the growth of the carbon nanotube uses neither an electric field nor a plasma but uses heat generated from a filament disposed in the growth chamber.

Claim 18 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein the temperature of said filament during the growth of the carbon nanotube is 400°C or more.

Claim 19 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein said filament is a filament made of rhenium or a material mainly comprising rhenium.

Claim 20 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein said starting material gas is a gas of a carbon source.

Claim 21 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 20, wherein said carbon source is a hydrocarbon, an alcohol or a mixture thereof.

Claim 22 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 21, wherein said hydrocarbon is methane, ethane, acetylene, propane, butane or a mixture of two or more thereof.

Claim 23 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 21, wherein said alcohol is methanol, ethanol or a mixture thereof.

Claim 24 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 20, wherein said starting material gas further contains one or both of a reactive gas and an inert gas.

Claim 25 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 24, wherein said reactive gas is hydrogen.

Claim 26 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 24, wherein said inert gas is helium or argon.

Claim 27 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein the total pressure of said starting material gas in the growth chamber is 0.1 to 100 kPa.

Claim 28 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein a thin film-like or fine particle-like carbon nanotube growth catalyst formed on the substrate surface is used.

Claim 29 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 28, wherein said fine particle-like catalyst is used as said catalyst and the diameter of the growing carbon nanotube is controlled by the diameter of said fine particle-like catalyst.

Claim 30 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 29, wherein said fine particle-like catalyst formed on said substrate is annealed in the growth chamber and in the presence of a reactive gas to remove impurities from the fine particle-like catalyst before the growth of the carbon nanotube.

Claim 31 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 28, wherein said catalyst is a transition metal Fe, Ni, Co or Pd capable of acting as the catalyst for the growth of the carbon nanotube, or an alloy of two or more thereof.

Claim 32 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 28, wherein said catalyst is an alloy of a transition metal capable of acting as the catalyst for the growth of the carbon nanotube and a metal which does not act as the catalyst.

Claim 33 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 32, wherein said alloy is an Fe-Pt or Co-Pt alloy.

Claim 34 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein during the growth of carbon nanotubes, one or both of said filament and said substrate are moved relatively.

Claim 35 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein said substrate is a semiconductor or glass substrate.

Claim 36 (Withdrawn): The method for growing a carbon nanotube as claimed in claim 17, wherein the growth face temperature of said substrate during the growth of the carbon nanotube is 600°C or less.